



A Reinforced SIP

Sing Homes perfects a new insulated log wall panel. **By Cati O'Keefe**

Before we dig into this building alternative, let's clear one thing up: While Sing Homes calls its product a "log," it's not a log in the traditional sense; rather, it's a super-insulated engineered square log that has the capacity to be designed into virtually any style of home, from a cozy log cabin to a modernist masterpiece.

And that's what makes this product worth a look from builders who want to drive cost out of their building process while still delivering a highly energy-efficient home.

Owner and inventor Peter Sing founded Sing Homes www.singloghomes.com in 1992. He patented a sawing technique (see illustration, page 54) that is used to produce quarter-sawn wood strips, which are then laminated with non-toxic glue to form one side of what he termed the Sing Square Log.

The two laminated "walls" and their waners and imperfections turned inside are then joined with wood spacers and metal fasteners to form a single log assembly.

The resulting product has high dimensional stability, which means it won't shrink or split and is milled to $\frac{1}{3,000}$ of an inch tolerance for a snug fit.

Sing continued tinkering with his original idea

and came up with the Honeycomb Core product, which took the dimensional strength of vertically cut wood and combined it into what he refers to as a reinforced SIP—a sandwich panel made from finish-grade plywood skins and vertical grain and wood fiber/rigid foam core, structurally bonded by non-toxic adhesive.

These panels—which serve as a home's siding, sheathing, framing, insulation, and interior wall board—come in 4', 6', and 8' sections (or larger custom sizes).

They boast an R-value of 45+ and can be finished on site to look like virtually anything. "You can use adobe, faux stone, bricks on the exterior," explains Jason Vaughn, the company's director of sales and marketing. On the inside, the panels can be left as is or finished with a natural plaster to look like drywall.

"This product is four to five times stronger than framed houses," claims Sing, who points out that honeycomb materials have been used in the aviation industry for the past six decades. "There is no framing—it passes the codes as is. Honeycomb is very light and has high insulation. We put 24" of insulation inside."

The product also boasts sound-deadening characteristics.

• Sing Homes offers a window frame product that is R-20+ versus industry-standard R-1.

ECO-FACTORS

> Sing Square Logs are milled from wood salvaged from small logs or pre-milled lumber with minimal scrap leftover.

> No-VOC glue is used to laminate the pieces that form the final logs.

> Quarter-sawn lumber (versus plain sawn) results in dimensional stability, which means no cracks or warps to let moisture in, which makes it a very durable product.

> The log's thick double wall provides thermal mass to absorb, store, and slowly release heat over time resulting in better energy efficiency.

> It is strong enough for both earthquake and hurricane prone regions.

> The formaldehyde-free Honeycomb Plywood Panels and Beams are 100% natural wood with low-density foam that takes less energy to produce than conventional insulating materials. They have an R-value of 6.5 per inch.

> Sing's other products, like window frames and doors have R-values of R-20+ and R-16, respectively.

BOTTOM LINE BONUS

> The product arrives on site with the interior surface, insulation, "framing," and exterior siding complete, which reduces labor on the job site. For example, the 4' x 8' floor panels on a 1,500-square-foot house can be laid and finished with a urethane coat in two hours.

> The cost runs from \$60 a square foot for do-it-yourself assembly to about \$150 a square foot for turnkey install.

> It is lightweight (less than half the weight of plywood), making it easy to handle and ship. The Sing Eco Log, for example, weighs approximately six pounds per linear foot.

A glance at a comparison of stick frame, SIPs, and Sing logs (right sample, far right photo) show the product's thickness. The logs make a beautiful, natural siding (near right). Below, a look at the product under construction. The beams and walls are both Sing products.

TECH SPECS

> The Sing Square Log has an 8"-thick wall with a 3" insulated Sing Honeycomb sandwiched between two pieces of vertical grain heavy plank cedar or fir.

> The Sing Eco Log, a lower cost option to the Square Log, is made of a 3"-thick urethane honeycomb core sandwiched between kiln-dried cedar or Douglas fir double tongue-and-groove heavy plank. It measures 6" x 8.5" x 8" and can be extended to 24 feet in length at the job site.

> The Sing Honeycomb Core is made from foam (urethane or EPS) and solid wood core. The Honeycomb Core Panel is standard at 4' x 8' though larger sizes are available. Installs with lag bolt, screws, heavy-duty nailing, or JC bolt. Thicknesses run from 2 1/4" to 6". The panels can be used as door cores, garage door panels, window frames, counters, and cabinets, and as a substrate for many types of veneers.



Sing gripes that Americans "even in Alaska" are willing to suffer an R-2 exterior door, while his panel doors are R-16 but cost half the price of a typical door. "Because the codes don't require it," he explains. "My window frames are R-20+," he adds, compared to the typical R-1 industry standard frames.

And the product is strong. Sing had his panels tested by the University of Washington, which found that it has a compression of 650 psi, which Sing claims makes the product up to 20 times stronger than regular SIPs.

If you want to build a Sing home, you send

the company your house plan. They calculate the linear feet of the project and then ship the beams and panels anywhere nationally. (As an example, the company is in McClery, Wash. To ship a typical house to the East Coast would cost about \$7,000.)

The homes can be built on any foundation, subject to local codes. Sing claims building with the product requires basic carpentry skills and pure labor. The logs weigh under 70 pounds each and can be moved by hand. A Skilsaw will cut the logs, and a Sawzall can create the openings.

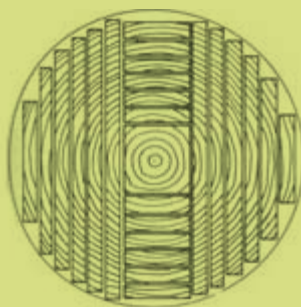
In terms of the future, Sing plans to keep inventing. Recently, he got a testimonial that further whet his interest in pursuing more easy-to-use, energy-efficient products.

"We had a couple who ordered a 2,800-square-foot house to put together themselves," Vaughn relays. "We shipped it and two weeks later thought we should check in with them and see whether they needed help. 'We're all done,' they said, 'We'll send you pictures!'" **GB**

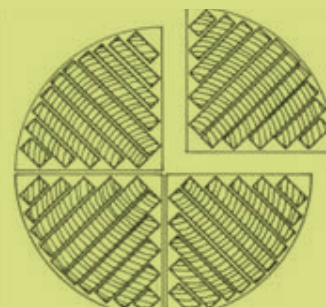


Look like a log home to you? This house would look right at home in most regions and has high energy efficiency to boot.

PLAIN SAWING



SING HOME'S QUARTER SAWING



Most lumber available is plain sawn (left), which produces the maximum yield. Plain-sawn lumber has varying grain orientations, which causes uneven drying and the board has a greater tendency to warp. Quarter sawing produces lumber with annual growth rings running almost perpendicular to the face of the board. The boards remain flat despite changes in moisture content.